

SMALL BONES OF THE HYPSILOPHODONTID DINOSAUR
DRYOSAURUS ALTUS FROM THE UPPER
JURASSIC OF COLORADO

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This note reports the discovery of numerous fragments of a small ornithopod dinosaur from the Morrison Formation (Upper Jurassic) of Colorado. This material is referred to the hypsilophodontid *Dryosaurus altus* (Marsh) and represents juvenile individuals of this species.

Very few specimens of hypsilophodontid dinosaurs have been reported from Colorado, and those were found almost a hundred years ago. Marsh (1887a) erected *Nanosaurus agilis* for a specimen (Yale Peabody Museum No. 1913) from Garden City, a few miles north of Cañon City, with material from the Hallopus Beds of probable Upper Jurassic age (Schuchert, 1939). However, the specimen is very fragmentary, with many of the bones represented by natural molds (Huene and Lull, 1908), and it is not demonstrably hypsilophodontid. Marsh (1877b) also described a well-preserved femur (YPM 1915) from the Morrison Formation of Garden City as *Nanosaurus rex*, but Huene and Lull (1908) correctly referred it to the genus *Laosaurus* Marsh.

The new material from Colorado consists of many vertebral fragments and the ends of long bones and metatarsals, the fragmentary condition of which is probably due to the fact that it was collected from the surface rather than *in situ*.

OCCURRENCE.— Near the base of the Upper or Brushy Basin Member of the Morrison Formation (Upper Jurassic), approximately 5.5 miles southwest of Uravan, Montrose County, Colorado.

COLLECTOR.— Rodney Scheetz and family.

REPOSITORY.— Brigham Young University, Earth Sciences Museum collections (No. ESM-171R).

A selection of the more diagnostic bones is illustrated in Figure 1. All the bones of ESM-171R are very similar to the corresponding elements of YPM 1876, the holotype of the hypsilophodontid dinosaur *Laosaurus altus* Marsh (1878), which is the type species of the genus *Dryosaurus* Marsh (1894). This specimen of *Dryosaurus altus* is from the Morrison Formation at Como Bluff, Wyoming, and it has never been adequately figured. The hypsilophodonts of the Morrison Formation are currently being studied by one of us (Galton), who considers *Dryosaurus* a valid genus. Apart from the form of the teeth and of the femora, the bones of ESM-171R are also very similar to the corresponding elements of *Hypsilophodon*

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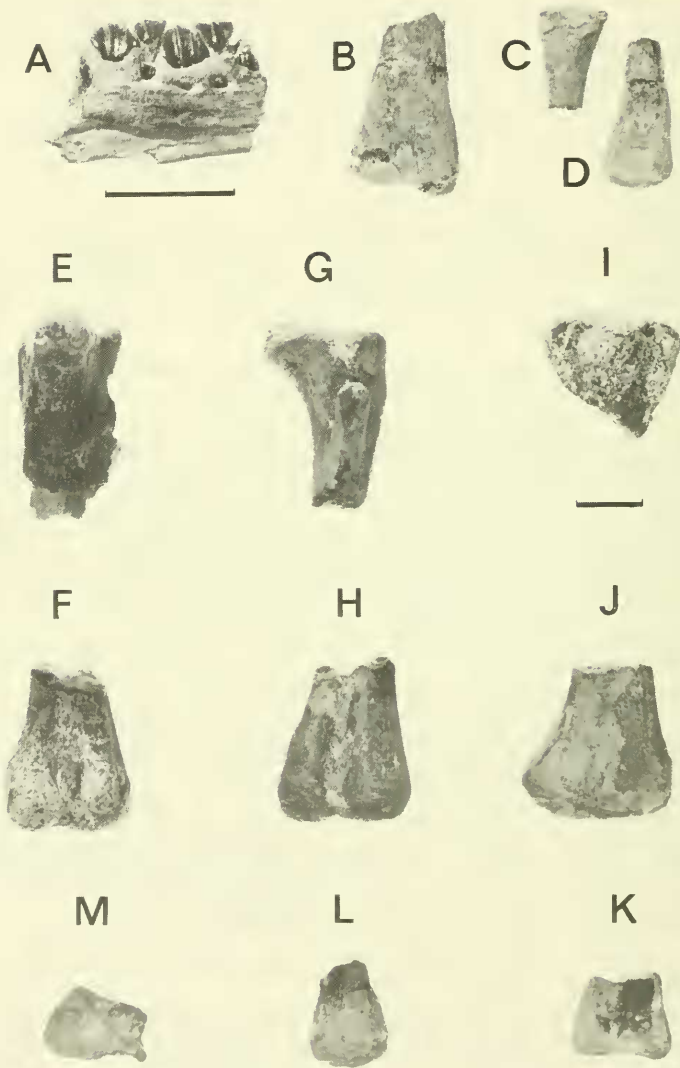


Fig. 1. *Dryosaurus altus* (Marsh), referred specimen BYU ESM-171R, Morrison Formation, Colorado. A, fragment of left dentary in medial view; B, distal end of left humerus in posterior view; C, proximal end of left radius in medial view; D, distal end of left radius in medial view; E, proximal end of left femur in posterolateral view; F, distal end of right femur in posterior view; G, proximal end of left femur in anterior view; H, distal end of left femur in anterior view; I, proximal end of right tibia in lateral view; J, distal end of left tibia in anterior view; K, distal end of right tibia in posterior view; L, distal end of left fibula in anterior view; M, proximal surface of left astragalus. A x 2 natural size; B-M natural size; horizontal lines represent 10 mm.

foxii Huxley (Lower Cretaceous, England), the anatomy of which will soon be described in detail (Galton, in press).

There are several jaw fragments containing teeth that are very similar to those of *Dryosaurus*. In the largest fragment (Figure 1A), replacement teeth are visible, and, as shown for most other reptiles by Edmund (1969), the teeth in each alternately numbered series were progressively replaced in sequence from back to front along the jaw, i.e., left to right. There are many isolated centra of dorsal vertebrae, typically ornithopod in form, and the lengths range from 11 mm to 31 mm. The femora (Figures 1E-H) are very similar to those of *Dryosaurus*. Proximally, the lesser trochanter is triangular in cross-section; it is separated from the greater trochanter by a deep cleft (Figure 1G); and distally the anterior intercondylar groove is quite deep (Figure 1H). A rather eroded proximal end is almost twice the size of those illustrated (Figures 1E, 1G).

Assuming similar body proportions to those of the much more complete material of *Hypsilophodon* (see Galton, in press), it is possible to give some idea of the sizes of the individuals represented by the bones of ESM-171R. The smaller of the dorsal centra and the humerus (Figure 1B), radius (Figures 1C, 1D), tibia (Figure 1J), fibula (Figure 1K), and astragalus (Figure 1M) are probably from animals with a body length of about 3 feet (0.9 m). The femora (Figures 1E-H) and tibia (Figure 1I) are probably from individuals that were slightly smaller, and the small tibia (Figure 1K) may be from an animal only 2 feet (0.6 m) long. The large dorsal centra and the eroded femur are probably from an animal about 5.5 feet (1.7 m) long. In contrast, the holotype of *Dryosaurus altus* represents an animal of about 10.5 feet (3.2 m) in length. Specimens representing a series of juvenile individuals are also known for the hypsilophodonts *Dysalotosaurus lettowvorbecki* Pompeckj (Upper Jurassic, Tanzania; see Janensch, 1955) and *Hypsilophodon foxii* (see Galton, in press).

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